# THE ZOOLOGIST

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## NOTES ON THE RABBIT, HISTORICAL AND GEOGRAPHICAL.

By Professor Herbert A. Strong, M.A., LL.D.

The oldest notices which we possess of the Rabbit, *Lepus cuniculus*, point to Spain as the country of its origin. The earliest reference to this animal in literature is to be found in Polybius (circa B.C. 204), who tells us that there were no Hares in Corsica, but that there were other animals (κύνικλοι) resembling Hares, which burrowed in the ground, and in addition there were Foxes and Wild Sheep (Moufflons). Ælian, who lived in the third century of the Christian era, tells us that he is no philologist, but that he has heard that the word is a Celto-Iberian—*i. e.* Basque-word; the Romans adopted the name with the animal, and called it *cuniculus*, which seems to have been a popular etymology from *cuneus*, a wedge, owing to the ease and rapidity with which these rodents made their way into the ground. Some of the ancient writers, like Varro and Pliny, thought that the Rabbit derived its name *cuniculus* from the military mines whereby towns were approached for attack; while other authorities, with more probability, inferred that the mine was called after the animal.* Of course the old English word "coney," which also appears as "conyng," and the old French words *connil* and *connin*, are derived from the same source, and the Romance words, like the Italian *coniglio*, all come from the original *cuniculus*. The question then arises whence came the word κόνικλος, which Ælian says he had heard was taken from the language of the Western

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* Martial says Rabbits first taught men how to undermine towns, Ep. xiii. 60.—Ed.

Iberians? The obvious resource is to turn to the Basque as spoken at the present day in Spain; and it appears that the genuine Basque word for a Rabbit is *unchi*. We must remember that this word has in the course of two thousand years probably undergone some mutilation, though to what extent we cannot tell. It may have been preceded by an aspirate, or a guttural; in any case, it seems likely that the Greeks saw in the Basque word enough resemblance to their word for a dog (κυών) to coin a bastard diminutive to express the strange animal which they hastily and popularly identified with the dog. The "Prairie-dog," or Marmot, we know to have been christened on this principle; and we know also how common it is for settlers in a new country to call unknown animals by the names of old-world species to which they happen to bear some fancied resemblance. The Greeks then will have called the Rabbit "the little dog"; the Romans, more practical, will have taken the name from the Greek, and by a false etymology called it "the splitter," as indeed they were accustomed to think of ploughing as "*findere terram*."

As for the name which the Rabbit has received in other languages (and it has received some very hard ones in Australia), it may be remarked that there is no native word for Rabbit in any Celtic language; and this fact points to its comparatively late introduction into Great Britain.* The Irish word *coinín*, Gaelic *coinean* (probably by popular etymology connected with the Gaelic name for a horse), the Welsh *cwning*, and the Cornish *cynin*, all seem, like the English *coney*, to be borrowed from the French *connin*. The Breton *konicl*, or *kounikl*, comes directly from the Latin *cuniculus*. The German *kaninchen* implies an original word *kanin*, which has passed into High German under different forms. It has passed into popular German under the form *küniclin*, and *künchel*, probably under the influence of *königin*, as if it were "the royal" animal. The Slavs, again, call the Rabbit, for some reason, *krâlik* or *krolik*, "the royal animal," the Slavish word for royal, coming probably from the name of Charles the Great. The Spanish *conejo* explains itself. The French word *lapin* is assumed to be a crippled form of "*clapin*," so that the original French conception of the Rabbit would be the "squatting" animal, which reminds us of the Greek designation of the Hare as the "cowering" animal, and I find that

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* See 'The Zoologist,' 1883, p. 432.—Ed.

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Huloet defines a coney-earth as a "clapper for conies." The modern Greeks call Rabbits *κουνέλια*, a word obviously modelled on the Italian *conigli.* The Gypsies, tolerably close observers of nature, call the Rabbit *kanéngro*, the genitive plural of the Romani word *kan*, an ear. But the common word for Hare, or Rabbit, in all the European dialects of Romani is *shosho*, connected with a Sanskrit root signifying "to leap." For this information I am indebted to my friend Mr. Sampson, the Librarian of University College, Liverpool, who has lived much with the Gypsies, and were he not the most learned of librarians, would probably be king of the Gypsies at present.

The etymology of the word "rabbit" has been a matter of dispute among the learned. But it seems quite certain that the name was first of all applied only to the young of this rodent, and the termination is none other than the French well-known diminutive *-ette*, seen in *briquette.* In 'The Book of Nurture,' by John Russell, Marshal in the Hall of Duke Humphrey of Gloucester, A.D. 1424, we find directions given for carving "conies," and then for carving and serving up their young, which are called "rabettes." Du Guez (cited in Furnival's 'Index,' p. 74) gives as the French equivalent *lapereau.* The French use the word *rabouillère* for a Rabbit's nest; and it is possible that this may come from an older form of *rabou*, from Spanish *rabo*, meaning a tail, in which case the French may have merely adopted some local Spanish word, or a corruption of it, and the English may have received the word from France.

It would be interesting to know the exact geographical range of the Rabbit in Europe at the present day. I much mistrust the testimony of foreigners on such a subject. But an English sportsman tells me that he shoots Rabbits every year in Andalusia; that they much resemble the English Rabbit, but are smaller and leaner, especially about the head. An Italian sportsman says there are a few Rabbits in Sicily, and has promised to procure a skin for me.* A Greek gentleman writes me word that he has never seen any in Greece, and does not remember to have seen any in Corfu, but has been told that they are still to be found in a small island near Piræus called the Island of Komsúndouros.†

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* In Italy there is no mention of the Rabbit before the time of Athenæus (A.D. 230), who observed it near Naples (Deipnosoph, ix. 64).—Ed.

† There are both Rabbits and Hares in the Cyclades, and their distribution is somewhat curious. See Erhart, 'Die Wirbelthiere der Cykladen; mit einer karte über die Verbreitung der Hasen und Kaninchen,' 8vo, Leipzig, 1858. See also Heldreich, 'La Faune de Grèce,' 8vo, Athens, 1878, p. 14.—Ed.

I never saw any in Norway, and was told of experiments which had been made to introduce them into the islands on the western coast, but the climate killed them off. There seem to be none in Russia, so far as I can learn. An old gentleman in Scotland states that in his boyhood there were no Rabbits to the north of the Tay; there are swarms at the present day; indeed on Handa there is hardly anything else, except sea-birds. Against this I must set the testimony of a Frenchman who lived in England in the year 1677, and who expressly states that there were Rabbits in the Western Hebrides. His book was published anonymously, and is called 'Mémoires d'Angleterre'; in the same work he alludes to the ferocity of the Scotch Wolves.

It is well known what an unwelcome introduction Rabbits have proved in Australia and New Zealand. But I do not think that anyone who has not witnessed with his own eyes the appalling number of these pests can appreciate the terror with which settlers regard them. In Victoria they threatened to eat out the first settlers on the rich Western District, and the Messrs. Robertson, of Colac, spent over £20,000 in exterminating them. They imported Scotch rabbit-trappers and settled them in the now flourishing township of Colac. These trappers dug out as many burrows as they could, and blocked up others with masonry of solid brickwork, and in the end the Rabbit had to give way to the Scotchman. But it is needless to say that a number of rabbit-trappers is necessarily employed upon every Australian property situated in the neighbourhood of a Rabbit-infested district, and this constitutes a heavy tax upon the proprietors. None of the methods hitherto adopted against the Rabbits seem to have met with much success.* Foxes were introduced into the south of Victoria, but they seem to have come to the conclusion that it was easier to catch a Lamb than a Rabbit, and in this frame of mind have continued to multiply. Ferrets were turned out, but, in Victoria at least, were unable to stand the cold in the winter, and this is natural, for the stock of Ferrets is originally from the north of Africa, whence the ancient Spaniards introduced them to cope with their Rabbit plague, just as the Romans seem to have imported the Egyptian cat in order to cope with that late but dreaded importation, the Rat. Weasels are constantly being bought up and exported to Australia and New

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* See 'The Zoologist,' 1888, p. 321; 1889, pp. 143, 323; 1892, p. 377.—Ed.

Zealand (Zool. 1882, p. 21), ostensibly for the purpose of keeping down the Rabbits, but as they destroy many other native animals the wisdom of introducing them is very doubtful.

In the Mallee Country, in Victoria, which was a regular forcing-ground for Rabbits, some settlers had tried to grow a few vegetables round their house, and in order to prevent the incursions of the Rabbits, had roped round their patch of kail-ground, and fastened dogs at short intervals along the rope, so that they could slip along the rope as they required in order to catch the Rabbits. But the numbers were so great that the dogs soon ceased to look at them. A writer in 'Chambers' Journal,' on "Rabbit-land," has very truthfully shown that even rewards offered for the scalp of Rabbits were not always effective in inducing settlers to endeavour to secure the reward. The settlers, in one experiment, were to fix the amount of the bonus to be paid on each scalp, and the State was to pay back 4½d. of every 6d. which the settler thus expended. The rent paid per acre being almost *nil*, it paid the lessee better to maintain a good stock of Rabbits with the view of obtaining a revenue from scalp-money than to rear sheep and cattle. In another case a squatter paid rabbitters 2d. for each tail that they brought back to the house. In a short time a quantity of tailless rodents were seen running about the station paddocks. These were not, as might have been fancied, a new development of the genus Rabbit, corresponding to the Manx Cat, but simply the old Rabbits whose tails had brought in twopence each, and who were now turned out to propagate their race, so that the honest rabbitters should not be reduced to penury. Wire-netting is used on a very large scale; some of these fences are hundreds of miles long; but there is always a chance of Rabbits burrowing under such fences, or again of their being fenced in; so that such fences are at the best but an imperfect remedy. Poisoning wheat has been tried, but the Rabbits grew too cunning for the poisoners: M. Pasteur proposed, as is well known, to inoculate the Rabbits with the microbes of chicken cholera (*cholera des poules*).* But no Government in Australia has seen fit to adopt his proposal, though I believe that experiments are still being carried out in a small island in Sydney Harbour. After all, a continent overrun with mad Rabbits would not be a very cheerful place of abode.

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* See 'The Zoologist,' 1888, p. 321.—Ed.

I have seen more parti-coloured Rabbits in Australia than I have ever seen in Europe. Near Queenscliffe numerous instances occur, not merely of white and black Rabbits, which are common, but of Rabbits with beautifully striped skins. I should think that rugs made out of such skins ought to fetch a good price.

It seems natural to suppose that as civilization and settlement progress, the Rabbits will gradually disappear, just as they have done in other countries. It is not until the tide of emigration turns towards Australasia that we can expect to find a steady diminution of these pests. It is much to be hoped that the working-men of all the Australian Colonies may one day show enough unselfishness and Imperial patriotism to wish to encourage the immigration of their poorer cousins of the Old Country into their Eldorado. The picture which M. O'Rell has lately seen fit to give of the Australian working-man is indeed calculated to give an extremely unfavourable impression of him to the Parisian *badauds*, and the charge which he brings against him of habitual drunkenness is quite untrue. But it is unfortunately true that there is a large party in Australia to whom the cry of "Australia for the Australians" means "We do not care to develop our resources if such development implies the importation of labour from over the seas." The Australian working-man is sober, and moderate in his diet, but it cannot truthfully be said that he takes much interest in what goes on outside his own colony. The best way to solve the Rabbit question, which is a vital one for the Australian working-man, would be to encourage the immigration of his British cousins to take the place of the rodents.

## BIRDS OBSERVED IN MID-WALES.

### By Harold Raeburn.

During a few days spent in Wales in May last the birds given below were noted. The absence from the list of many common species of course does not imply that they do not occur in the district. The list is made up solely of species seen or identified by note in a rather hurried walk through parts of Montgomery, Radnor, and Cardigan. It is probably shorter, on account of bad weather, than it would otherwise have been, and the observations were made almost entirely inland. No swimming birds were observed, with the exception of *Larus fuscus*, of which a single specimen, an adult in full plumage, was noted. The authorities are silent as regards the Redstart in Mid- and North Wales, but I found it a common, indeed abundant, bird in most of the localities which I visited. The Pied Flycatcher also appears to be pretty generally distributed. The presence of the Red Grouse on the *grassy* hills of Radnorshire is interesting, but probably it does not stray very far from the heather. The Dunlin, *Tringa alpina*, was not seen, but the Curlew, *Numenius arquata*, is thinly scattered, and the Golden Plover was observed in one locality. The Carrion Crow was abundant everywhere, but only a single pair of Ravens was seen. The country may be described generally as hilly, but not mountainous, with deep wooded valleys, the prevalent tree being the oak. Woods of considerable age exist in some parts, but the bulk consists of this century's growth, probably planted to replace those cut down for shipbuilding. The extensive damage done by the frosts and N.E. winds of May last was well seen in the oak-woods of the higher passes, where for miles the trees presented a mass of brown withered foliage as in late autumn. Some rugged "cwms" occur in places where the rocks appear through the sides of the hills, forming small precipices, often wood-girt; but the hill-outlines in general are smooth and flowing, sloping up to grassy or heathery moorlands, without dominating peaks such as are found north of the river Dyfi. Plynlimmon, 2469 feet, is the culminating height of the district, but it is a dreary elevated moorland, rather than a mountain.

The birds observed by me were:—

**Mistle Thrush**; **Thrush**; **Blackbird**.—Last two abundant.

**Ring Ouzel**.—Not many; observed on the sides of the "cwms."

**Wheatear**.—A few seen on the hill-sides and "cwms."

**Whinchat**.—Several pairs by the roadside in the higher parts of the valleys.

**Redstart**.—In mnny places one of the most conspicuous of roadside birds, haunting dry stone-walls, hedge-banks, and old timber on the outskirts of the woods.

**Robin**.—Common.

**COMMON WHITETHROAT.**—Common. The Lesser Whitethroat was not observed.

**GARDEN WARBLER.**—Fairly distributed, sometimes high up the valleys. Nest and eggs from West Montgomeryshire.

**WILLOW WARBLER.**—Common in most localities.

**WOOD WARBLER.**—Probably local; not heard, but nest with eggs and hen bird seen.

**SEDGE WARBLER.**—Fairly common.

**HEDGE ACCENTOR.**—Common.

**DIPPER.**—Only one seen, high up (Radnorshire).

**GREAT TIT.**—Common.

**BLUE TIT.**—Abundant. To a nest with young the old birds brought large green caterpillars.

**NUTHATCH.**—A pair had a nest with young in a hole in an oak at the height of about fifteen feet. The top of the entrance to the hole was slightly daubed with yellow clay mixed with small stones. The old birds were very tame, bringing food while I stood within a few yards of them. Their motions were Tit-like, yet they kept their bodies close to the bark, like a Creeper; the note was low and inward, and inaudible a few yards distant.

**WREN.**—Fairly common, and at some altitude.

**PIED WAGTAIL.**—Fairly common.

**GREY WAGTAIL.**—Only one or two pairs noted.

**TREE PIPIT.**—Observed in parts.

**MEADOW PIPIT.**—Usually at considerable elevations.

**PIED FLYCATCHER.**—Observed in three different localities. The birds always very tame, especially the males, which were very conspicuous, and the nests easily discovered. *Muscicapa atricapilla* in its general behaviour resembles *M. grisola*, but struck me as being heavier, slower, and not so restless. It often takes its prey from the ground, instead of capturing it on the wing—in this respect resembling the Red-backed Shrike in its motions. An attempt to syllablize the song is "tzit-tzit-tzit—tzui-tzui-tzui," the last three notes very rapidly, almost in a trill.

**SWALLOW.**—Common.

**MARTIN.**—Not so numerous as the Swallow.

**SAND MARTIN.**—Only observed in one locality in Cardigan.

**GREENFINCH.**—Very abundant.

**HOUSE SPARROW.**—Very numerous. No Tree Sparrow was identified.

**Chaffinch.**—Very common.

**Linnet.**—Fairly numerous, ascending to 1000 ft.

**Bullfinch.**—One, a male, seen in Montgomeryshire.

**Common Bunting.**—Not numerous in any district.

**Yellow Bunting.**—Generally distributed and common.

**Starling.**—One of the commonest and most generally diffused birds here as elsewhere throughout the British Isles.

**Jay.**—The only one seen was apparently a hen bird putting the finishing touches to her nest, which was built amongst the small twigs growing from the trunk of an oak; height from the ground, 8 ft.; above sea-level nearly 1100 ft.; the tree being among the last stunted stragglers on a steep hill-side.

**Magpie.**—One or two pairs only observed nesting.

**Jackdaw.**—Abundant in many places; nesting in hollow oaks in Radnorshire, and in the rocks above Falls of Mynach at Devil's Bridge, Cardiganshire.

**Raven.**—Only one pair seen.

**Rook.**—Numerous, though perhaps less so than in most parts of England.

**Carrion Crow.**—One of the commonest and most conspicuous of large birds in most districts.

**Sky Lark.**—Observed up to 1800 feet.

**Swift.**—Very numerous, and generally distributed.

**Green Woodpecker.**—Heard once only, but unmistakably, at the edge of an old oak wood in Radnorshire.

**Cuckoo.**—Common.

**Kestrel.**—Only one pair seen, nesting on small rock.

**Common Buzzard.**—One pair, nesting on small broken rock. Nest a very slight structure, a few twigs thrown together and lined with tufts of grass and luzula, some fresh leaves of mountain ash strewed around; position very exposed and easily accessible, the usual tree in front and overhanging ledge wanting. Welsh name Barcud, which really means a Kite; in N. of England and Lowland Scots, Gled or Glead.

**Heron.**—Only one seen, in Cardiganshire.

**Wood Pigeon.**—Numerous, some large flocks seen; two nests found in hazel and blackthorn thicket were both within two feet and a half of the ground.

**Stock Dove.**—Only one pair identified, first by note and female lifted off nest in an old oak-stump.

**Red Grouse.**—Not abundant in districts passed through, as comparatively little heather grows there. It occurs sometimes on the grass at considerable distances from the heathy grounds.

**Pheasant.**—Numbers of cock Pheasants were heard crowing in the woods; one in an oak thicket at over 1000 feet elevation.

**Partridge.**—Several pairs seen.

**Landrail.**—Several heard.

**Waterhen.**—One seen in Montgomeryshire.

**Golden Plover.**—Two pairs, which had young, in Radnorshire, on watershed peat-bog.

**Lapwing.**—Common, and generally distributed.

**Common Sandpiper.**—One or two seen.

**Oystercatcher.**—Single bird seen from railway.

**Curlew.**—Thinly distributed, and far from numerous.

**Lesser Black-backed Gull.**—A fine adult bird seen from the train inland.

## THE AUTUMN SONG OF BIRDS.

### By O. V. Aplin.

Why should some birds have an autumn song and others not? Let me explain what I mean by the autumn song. The birds' summer ends with their moult; I speak now of birds in general, without considering the exceptions, presented by Swallows, for instance. Some species become silent shortly *before* they moult in early autumn. They cease singing when they have done breeding, or as soon as their young have hatched. Others sing much later in the summer. After the song has ceased and an interval has elapsed, in certain cases, we hear it again. From mid-August on into November the second song may be heard. This is the autumn song. Some birds, if the weather be genial, strike up in November (or even in October), and may be heard all through the winter in mild weather; but this is not an autumn song, properly so called. It is the beginning of their ordinary song, which they will continue through the following spring. Such birds are the Song Thrush, Robin, Wren, Hedgesparrow, and Starling. The Great Titmouse and Mistletoe Thrush often begin their regular song in December. This must not be confused with the autumn song. Leaving out of the question this *late* autumn song—really the beginning of the spring song before the old year is out—it seems that certain birds have an autumn song which is heard pretty regularly, while certain other species are never by any chance heard to sing at that season. It will generally be noticed that the autumn song is of very poor quality; that the strains are short and broken; and that it gives one the idea that the bird giving utterance to it is a beginner trying to sing. For this reason it seems likely that the autumn song is chiefly the production of young birds of the year, which, having completed their moult, find the year still mild and genial, and therefore try to sing. Still we are puzzled why some species should do so and others not.

The Mistletoe Thrush I have heard singing a few wild notes on Sept. 16th, and in fairly full song on Nov. 6th. It often begins its usual strain in December, and leaves off quite early. The Song Thrush I have heard singing feebly at the latter end of September and in October. The regular song is commenced sometimes as early as November. But I have never heard a Blackbird sing the autumn song. In some seasons this bird will sing into the latter half of July, but, unlike the Thrush, postpones the opening of his regular song until the new year. In the district in which I reside I do not find that he sings before February, and it is often the middle of the month before his mellow notes are heard. All three species of Leaf Warblers (*Phylloscopus*) have an autumn song. The Willow Wren, which, with a few exceptions, is silent soon after the middle of June, strikes up again about the second week in August. But the Chiffchaff, whose spell of spring song is very long, lasting from about the third week in March until the last in July sometimes, naturally does not open again so soon. It is heard in the last days of August, through September, and even into October in some years. The Wood Wren I have heard in August. But I never heard any of our best Warblers (Blackcap, Garden Warbler, or Whitethroats) sing in autumn; they sing well on into July, and in some cases to the end of the month. Neither have I ever heard any of the river warblers sing the autumn song. But I have a note from Mr. Warde Fowler saying that he heard the Grasshopper Warbler this year on Sept. 15th; I have heard it in summer as late as July 23rd. The Robin's autumn song is of course familiar to everybody. The broken strains we hear at first are most probably the productions of young birds just over their moult.

The Nightingale, being so nearly related to the Robin, it is rather curious that the young of this species do not sing; it appears, however, that they do not. They must moult before they leave us, for the young birds of this family wear the nestling plumage for a very short time only. But I know next to nothing about the Nightingale after it leaves off singing in June. I do not even know when it quits the country. During the recent meeting of the British Association at Oxford, Mr. Howard Saunders, Mr. Warde Fowler, Mr. A. H. Macpherson, and I were walking over Foxcombe Hill, on Aug. 12th, and saw a (young?) Nightingale for a moment. Mr. Saunders identified it for us; but that is the only one I ever saw in that month, to my knowledge. The old Nightingales are as chary as the Robins are lavish of their song; so perhaps we should not expect their young to make attempts at singing in autumn, like the precocious young Robins. I should like to know if the Nightingale is ever heard in autumn in its winter quarters.

Looking at the case of some birds, we might at first imagine that those species which leave off singing early in the summer sing again in autumn, while those which sing throughout the summer do not have a distinct autumn song. But too many exceptions occur for this to be laid down as a rule. For instance, every autumn I hear the Chaffinch trying to sing; the song is always very short, imperfect, and broken. I have heard it in August (once, on the 16th), September, October, November, and on one occasion in December (4th and 5th). The Chaffinch opens song regularly, sometimes in the last days of January, but more often in February. We should expect it to sing again in autumn, because in summer it is rarely heard much after Midsummer-day; but in the late season of 1888 I heard it up to July 19th.

On the other hand, the Yellow Bunting, which sings regularly on into August, does not have the autumn song, and is not heard again until it opens for the spring in late January, or more usually in February. The same may be said of the Corn Bunting. There are exceptions, of course; for instance, in the fine autumn of 1884, I once heard a Yellow Bunting singing on Oct. 28th. The Goldfinch may be heard in late September and October, but the song is not full; the Linnet on sunny October days. The Greenfinch I have heard in the latter half of August (once), and once on Dec. 1st. On a very nice day on Nov. 29th, 1889, I heard a Bullfinch stringing three notes of its song together. On the same day a Ring Dove was cooing. Stock Doves and Ring Doves are both heard in early autumn, but they breed so late on in the season that we can hardly consider this as an autumn song. The Great Titmouse has the autumn song, and is heard sometimes in September and October. The Wren sings loudly in October, but this is probably merely an early opening of the regular spring song which goes on in fine weather all the winter. It is also difficult to say whether the vocal efforts of the Hedge Sparrow in late autumn are to be regarded as the beginning of the winter song or an instance of the autumn song—most probably the former. The Starling sings in October; but here again there is a difficulty in determining to which category its chattering notes and whistling should be assigned. The Sky Lark—notwithstanding it is a winter singer in bright, mild weather—has, I think, a real autumn song, being heard from mid-September on into October. I have only once heard the Pied Wagtail sing in autumn (*i. e.* on Sept. 30th, 1894); at the same time I must confess that I have not often heard it in spring. The only time I ever heard a Magpie distinctly trying to sing was on Oct. 10th; he sat in a thorn-bush jerking out a succession of queer and varied notes in the oddest manner.

The present short and incomplete essay is merely to direct attention to a subject which I think, if more exhaustively treated, might become a very interesting one. The remarks here offered are founded on too few facts. I have not even exhausted the material at my command; nor do I claim finality for any conclusions which I may seem to have drawn. I trust at some future time to return to the question.

# THE REPRODUCTION OF THE LOBSTER.

By Francis H. Herrick.*

The breeding habits of the Lobster, *Homarus americanus*, is a subject about which many conflicting statements have been made. These have resulted from insufficient observation, while much has also been written in ignorance of ascertained facts.

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* From the 'Zoologische Anzeiger,' 1894, pp. 289—292.

The questions of most immediate interest are :—(1) when are the eggs laid? (2) What is the length of the reproductive period, or how often are the eggs produced? (3) what is the law of production, or the relation between the number of eggs and the size of the animal producing them? (4) how are the ova fertilized? (5) when do the young hatch? (6) what is the law of survival of the larvæ?

I have recently gathered some new facts which bear particularly upon the first of these questions, and clear away much obscurity which has surrounded it. Before giving these I will first point out the condition in which this subject has remained up to a very recent date.*

It at first seemed probable that the breeding season of the Lobster was not limited to a definite season of the year, but further study convinced me that this conclusion was erroneous, and in a paper published in 1891 the following statement was made :—"The spawning season is confined to the summer months, and the eggs which are then laid are carried by the female throughout the fall, winter, and spring, and are not hatched under natural conditions until the following summer" (Notes on the Habits and Larval Stages of the American Lobster, 'Johns Hopkins University Circulars,' vol. x., Sept. 1891).

Bumpus ('Journal of Morphology,' vol. ii., Sept. 1891) tells us, in his careful paper on the embryology of the Lobster, that "the eggs are normally deposited during the months of July and August." Eggs collected in winter at Nahant "were almost invariably in the same advanced stage of development—the eyes large and bright, the appendages well outlined, and the yolk occupying but a fraction, perhaps one-third, of the surface exposed." Of hundreds of Lobsters examined in May, 1890, at Woods Holl, Mass., "not a single one had eggs in early stages of development." Verrill ('Report upon the Invertebrate Animals of Vineyard Sound, &c.' p. 745) affirmed that he had examined Lobsters with freshly-laid eggs in December, and that the breeding season extends over a large part of the year.

The true answer to the first question propounded above seems to be as follows :—The majority of adult Lobsters extrude their eggs during the months of June, July, and August, but a considerable number—probably as many as 10 per cent. of the entire number which breed in the year—lay eggs during the fall, winter, and spring months. Careful systematic data have been collected by the U.S. Fish Commission during the past winter at Woods Holl, bearing upon this and other questions relating to the Lobster, and will be given in the detailed report now in the course of preparation.

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* See "The Habits of the Lobster, and their Bearing on its Artificial Propagation" (Bull. U.S. Fish Commission, vol. xiii. 1893).

Newly-laid eggs have been collected in the fall and winter on the coasts of Maine and Massachusetts. Microscopical examination showed them to be undergoing perfectly normal development from yolk-segmentation onward. Mr. Vinal N. Edwards sent me a number of live Lobsters from Woods Holl, Dec. 4th, 1893. One of these had external eggs, which had probably been extruded less than three weeks. At Eastport, Me., a female Lobster with partially discharged eggs was taken from a Lobster-car April 30th, 1894, by Mr. W. J. Fisher. In this case the eggs were laid in less than ten hours from the time the Lobster was placed in the car. About one-eighth of the spawn was under the "tail"; the rest was found in the body.

This production of eggs out of the summer months seems to be a perfectly normal process, although a somewhat unusual one; and it is possible that if the habits of many fish and other animals, with a fairly definite breeding season, were minutely studied, a similar variability would be found.

How often does an adult female Lobster breed? It had been supposed that the mature Lobster laid eggs at least once a year. In the paper already referred to I pointed out the important economic fact that the adult Lobster could not possibly breed oftener than once in two years, that annual breeding was out of the question, as was "abundantly proved by the slow growth of the ovarian eggs, by the immature condition of the ovaries at the time when the young are hatched, and by the large percentage of non egg-bearing females taken in the winter and spring." This fact was further established, upon the ground of anatomy, by dissections and histological examinations of a large number of individuals, representing every important phase in the growth of the ovaries. This is confirmed by Garman ('The Aquarium,' Jan. 1894, p. 91), who reaches conclusions similar to those already expressed.

The law of the production of ova may be expressed as follows:—The numbers of eggs produced by female Lobsters at each reproductive period vary in a geometrical series, while the lengths of the Lobsters producing these eggs vary in arithmetical series. According to this law we have the following:—

| | | | | | |
|---|---|---|---|---|---|
| Series of lengths (in inches) | 8 | 10 | 12 | 14 | 16 |
| Series of eggs | 5,000 | 10,000 | 20,000 | 40,000 | 80,000 |

An examination of nearly a thousand cases shows that this law usually holds good.

The question of fertilization of the egg is a very difficult one, and nothing is yet known of how the spermatozoon is conveyed to the egg, and penetrates its membranes. We know, however, that copulation takes place in the spring and summer months, and probably at other times of the year; that fertilization is effected outside the body; that the semen is stored in a peculiar pouch or receptacle, where it may retain its vitality for months, at least.

The eggs are carried, attached to the body of the female for a period of from ten to eleven months, that is, on the coast of Massachusetts, from the middle of July or the 1st of August to the middle of the following June. The period of fosterage undoubtedly varies considerably in eggs not produced in summer, some of which may hatch in the fall and possibly in the winter months.

Some Lobsters become sexually mature when they are eight inches long, while a relatively small number do not produce eggs until they have attained a length of twelve inches. The majority are mature when 10½ inches long.

The law of survival of the larvæ I have discussed in a paper already referred to ('Bulletin of the U.S. Fish Commission,' vol. xiii. 1893). It is probable that the survival of two out of every ten thousand larvæ hatched is a high estimate, since the female of average size produces upwards of ten thousand eggs at a single laying, and may have the opportunity of reproducing more than once in the course of her life. The number of survivals must be less than the number of adults caught and destroyed each year, since the fishery is declining, and in some places has been destroyed through the persistence with which it is carried on.

Shortly after hatching her brood, the mother Lobster moults,

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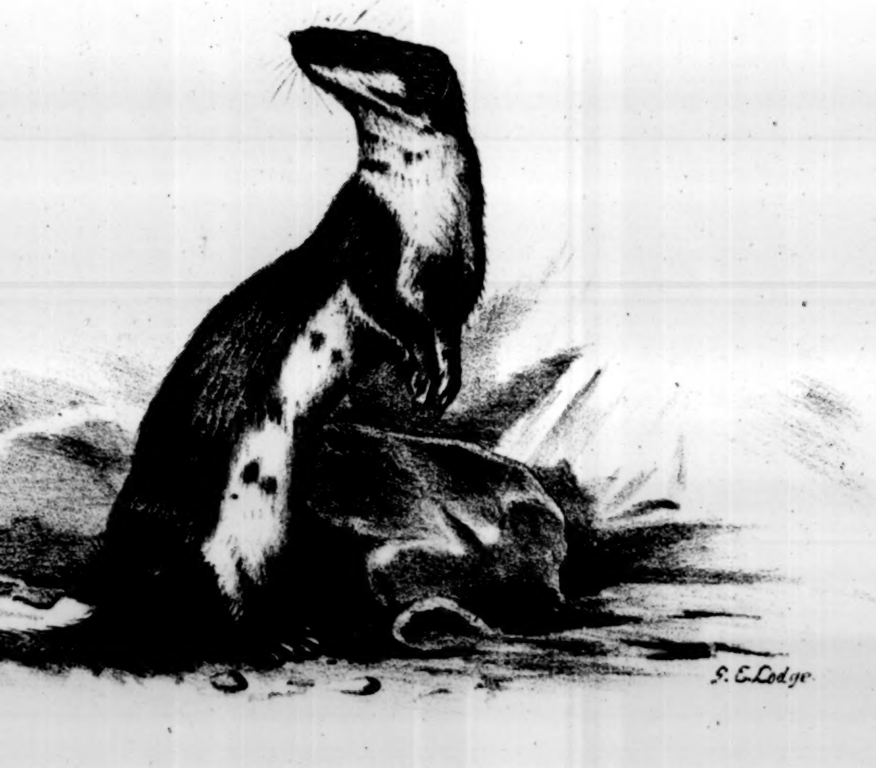
Zool.1894.

Plate 2.



West, Newman imp.

The Weasel.
*Mustela Vulgaris.*

but does not produce eggs again until the following summer. Very rarely a female Lobster moults just before extruding her eggs. In such cases probably two moults intervene between the time of hatching of one batch of eggs and the extrusion of another.

Considering the fact that the American Lobster ranges through twenty degrees of latitude—from the southern coast of Labrador on the north, to Delaware on the south—there is perhaps less variation in the breeding habits than we should expect. In the north the eggs are laid somewhat later in the summer, and the period of fosterage is undoubtedly longer.

It is probable that when the habits of the European Lobster, *Homarus vulgaris*, are carefully studied, they will be found to conform in all essential respects with those of its American relatives.

# THE WEASEL, *MUSTELA VULGARIS*.

By the Editor.

(Plate II.)

It is surprising what confusion exists in the minds of most persons concerning British species of the *Mustelidæ* or Weasel family. The Stoat and the Weasel are frequently confounded, even by those whose daily avocations afford them constant opportunities of informing themselves. It has been our good fortune to visit at various times, generally in the shooting-season, nearly every county in England, and very many counties in Wales, Scotland and Ireland, and to have conversed with gamekeepers "of all sorts and conditions" on the subject of the game under their charge, and the so-called "vermin" which they are in the habit of destroying; and we have been struck with the general want of knowledge displayed by them, either from lack of observation, or for want of such reliable text-books as would afford them the necessary information.

Owners or lessees of shooting, and indeed country gentlemen generally, would render good service, and indirectly do more good than the "School Board," if they would help their keepers and foresters to qualify themselves for a more efficient discharge of their duties by placing within their reach a few good books on Natural History with which to while away the winter evenings, and to amuse as well as instruct them. It so often happens that the elementary education provided for the class to which we refer, proves of little use to them in the walk of life to which by choice or accident they are sooner or later called. Reading, writing, and simple arithmetic are of course taught, and are of course indispensable; but what information do they, or can they, possibly acquire, except by experience, very gradually and casually gained, on such subjects as the rearing of live stock; the management of deer; the breaking and training of dogs; the habits and natural food of the various wild creatures by which they are surrounded; the characteristic mode of growth and economic value of woodland trees; the cultivation of the kitchen garden, or the profitable management of poultry and pigeons? These are a few of the subjects on which a series of simple manuals might be usefully written and generally disseminated; and from the remarks which we have heard expressed, we do not doubt that such handbooks would be highly appreciated. But to serve any useful purpose they should be written in simple language, clear and concise, free from technicalities, yet as full of facts and practical teaching as possible. Were some such aid as this within reach of the class referred to, there can be no question that it would stimulate original observation and research, and, sooner or later, naturalists would be placed in possession of useful statistics which could be collected perhaps in no other way.

But to return to the Weasel (A.-S. *wesle*), the smallest of the *Mustelidæ*. The first thing that strikes us on looking at any animal of this family of the Carnivora, is the curious adaptation of their structure to their mode of life. The long snake-like body, short legs, strong yet supple neck, and large and powerful jaws, all combine to fit them admirably for pursuing, holding, and killing the creatures (often much larger than themselves) upon which they have to depend for their existence. So great also is their keenness of sight, scent, and hearing, combined with wonderful courage and activity (which extends even to climbing trees), that no wonder their victims, though equally fleet of foot it may be, seem paralyzed with terror on finding themselves pursued. And here it may be well to offer a few remarks as to the mode in which the *Mustelidæ* kill their prey. It is popularly believed that when a Stoat or Weasel seizes a Rabbit or a Rat, it severs some of the principal veins of the neck, and then hangs on and sucks the blood like a leech. Others maintain that the first bite is always fatal, owing to the perforation of the spinal cord at the base of tbe skull. In the case of young rats and mice killed by the Weasel, this is doubtless true; their skulls are so thin that they may be easily crushed between the finger and thumb; but in the case of a larger animal like the Rabbit it is otherwise.

Some years ago Dr. Buchanan, of Glasgow University, contributed to the 'Annals and Magazine of Natural History' a paper "On the Wound of the Ferret,' in which he showed that while small animals were killed by the brain being pierced, larger victims died rather from nervous exhaustion, and in no case was any blood-sucking observable. Mr. S. Woodcock, of Bury, also, writing in 'The Field' of Dec. 27, 1862, expressed a similar opinion, his experiments proving that the assailant does not retain his first grip as has been so often stated, but worries and tugs at the head and neck, so that the cause of death seems to be exhaustion and shock to the nervous system rather than the effect of any mortal wound. The late Mr. E. R. Alston examined a young Rabbit which had been rescued alive from a Stoat. No external injuries were visible, save slight blood-stains on the head and neck; but the poor beast was in a semi-torpid state, sitting with its eyes half closed and its head twisted to the left side. On being pushed, it moved one step in a helpless mechanical way, and then remained motionless again. *Post mortem* dissection disclosed a large quantity of clotted blood beneath the skin, and on this being removed the skull was found to be fractured in several places, and pressed in on the brain in a way which fully accounted for the powerless and stupefied condition of the animal.

After the prey is killed, the first tit-bit is usually the neck; sometimes the eyes are torn out and devoured; and then the carcase is dragged off and concealed near the habitation of the destroyer. The power which the Weasel has of bending the head at right angles with the long and flexible yet powerful neck, gives it, as Bell has remarked, great advantage in the mode of seizing and killing its prey. It also frequently assumes this position when raising itself on its hinder legs to look round—a very characteristic attitude, which has been well depicted by Mr. G. E. Lodge in the accompanying illustration (Plate II.)

It should be observed that the Weasel is a much smaller animal than the Stoat, averaging 7 in. or 8 in. in length, exclusive of the tail, which is about 2 in., as against 9 in. or 10 in. for the sexes of the Stoat, which has a tail of 5 or 6 in. invariably terminating at all seasons in a black tuft.

Weasels and Stoats hunt in family parties, and sometimes even in little packs, like hounds. The late Mr. E. T. Booth, in 'The Field' of 6th Oct., 1883, gave a most graphic description of an encounter which he once had in East Lothian with a pack of Stoats which attacked a terrier he had with him, and of which, with the aid of the dog and his breechloader, he killed a dozen or fourteen.

Richard Jefferies also, in his 'Gamekeeper at Home' (p. 121), has written from personal observation as follows:—

"Weasels frequently hunt in couples, and sometimes more than two will work together. I once saw five, and have known of eight. The five I saw were working a sandy bank drilled with holes, from which the rabbits in wild alarm were darting in all directions. The Weasels raced from hole to hole, and along the sides of the bank, exactly like a pack of hounds, and seemed intensely excited. To see their reddish heads thrust for a moment from the holes, then withdrawn to reappear at another, would have been amusing, had it not been for the reflection that their frisky tricks would assuredly end in death. They ran their quarry out of the bank and into a wood, where I lost sight of them. The pack of eight was seen by a labourer returning down a woodland land from work one afternoon. He told me he got into the ditch, half from curiosity, to watch them, and half from fear—laughable as that may seem—for he had heard the old people tell stories of men (in the days when the corn was kept for years in barns and so bred hundreds of rats) being attacked by these vicious little brutes. He said they made a noise, crying to each other, short snappy sounds; but the pack of five I myself saw, hunted in silence."*

The female Weasel is smaller than the male, and is no doubt "the little reddish beast not much bigger than a field-mouse but longer," which Gilbert White mentions as being called a *cane* * by the country people in Hampshire.

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* Other instances of Weasels hunting in packs might be quoted on good authority. See Atkinson, 'Zoologist,' 1844, p. 490; Shand, 'The Field,' 21st July, 1891; and Witchell, 'Fauna of Gloucestershire,' 1892, p. 20.

There seems to be a great disparity in the relative numbers of the sexes, or else the female is better able to take care of herself; perhaps her smaller size favours her concealment. However that may be, most keepers assert that they trap and kill many more males than females. It is stated by Bell, in his 'British Quadrupeds' (2nd ed., p. 187), that two or three litters are annually produced, but this appears doubtful, for, so far as we are aware, there is no evidence on record to prove that any of our native Carnivora breed more than once in the year.† The young, from four to six in number, are to be found in what may well be termed a nest, for it is generally a hole in a bank or tree-root, or in a stone or wall, lined with dry grass or leaves. The period of gestation is presumably the same as in the Polecat and Ferret, namely six weeks; but we do not know whether this has been definitely ascertained by keeping a pair in captivity. A young Weasel is very helpless for some time, and will remain where dropped by the parent if she is disturbed when carrying it, as she does, in her mouth. If the young are discovered before they are able to take care of themselves, the old one will defend them, and will courageously fly at the nose of any dog who presumes to look in upon them.

There is no reason why Weasels should not be kept in cages like Squirrels, for they make most amusing pets. They are extremely playful, and although at first their natural timidity causes them to hide a good deal, they gradually get over this shyness, and will come when called to take food from the hand. Their activity is surprising, and their movements are sometimes so rapid that the eye can scarcely follow them. This is especially the case when a Weasel is surprised in the open and chased by a terrier. If brought to bay they fight pluckily, and will hang on to the nose or lips of a dog with the tenacity of a terrier. Like Stoats they can climb well, and have often been seen to ascend trees many feet from the ground; and this not only when chased by an enemy, but from choice when in pursuit of prey. A Weasel has been found in a tree twelve feet from the ground, and has been even known to make its nest in a hollow tree. One was seen to jump from the top of a limestone pit into some water thirty or forty feet below, and swim acrose the pool. For both Weasels and Stoats can swim well; we have often seen them crossing a pool voluntarily. Sometimes they would carry a young one across, sometimes a dead field-mouse, holding it in the mouth as a cat would carry a kitten. On one occasion a Weasel was observed to cross a river at high-tide, where the water was fifty or sixty yards wide.

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* *Cane*, a little dog, cognate with *canis*. In Surrey it is called *Kine*. In East Sussex it is known as *Beale;* in Yorkshire, *Ressel* or *Rezzel;* in Norfolk, *Mouse-hunter;* in East Suffolk, *Whitethroat* (male) and *Mouse-hunt* (female). Gilbert White, also, has another observation on this animal which is worth quoting. In his fortieth letter to Pennant, he writes:—"Weasels prey on Moles, as appears by their being sometimes caught in Mole-traps." The fact of their being caught in Mole-traps is vouched for by more recent writers (see, for instance, 'The Field' of 25th March and 8th April, 1882), but it is possible that the Weasel might be merely following the Field-mice which make use of the Moles' runs.

† Dr. Ritzema Bos, in his 'Tierische Schädlinge und Nützlinge für Ackerbau,' states that in years when field-mice are exceptionally abundant, there appears to be a second litter of young Weasels in the early autumn months.

The Weasel, like the Squirrel, will catch small birds when he can take them by surprise, and will carry off eggs between his chin and fore paws, just as a rat will do. But his favourite and natural food consists of field mice, *Mus sylvatica*, in the woods and hedgerows, *Mus musculus* about the stacks and farmyards, and *Arvicola agrestis* in the open fields and pastures; while he will not hesitate to attack a rat, even if larger than himself, should occasion arise. So frequently have we witnessed his pertinacity in mouse-hunting that, on this score alone, we should be inclined to forgive him for carrying off a chicken. We would even go a step further. We have known stack-yards in which Weasels were repeatedly seen and left unmolested. Hens with chickens were daily pecking about the yard, but no chickens were missed. It appeared that, so long as the Weasels could get mice and rats, they preferred fur to feather. The late Mr. R. F. Tomes, of Welford-on-Avon, once kept watch from a place of concealment upon a nest of young Weasels, and saw the parent bring, in a little more than an hour, five field mice for her young, which were playing in and out of the hole. On her arrival with the fifth, he shouted and made her drop it, when, on picking it up for examination, he found it to be the Short-tailed Field Vole, *Arvicola agrestis*.

The utility of the Weasel in checking the devastation of field mice was never more clearly established than by the evidence which was tendered to the Committee appointed by the Board of Agriculture to enquire into the plague of Field Voles in Scotland in 1892.* In the Minutes of Evidence appended to the Report of this Committee issued in 1893, will be found numerous statements, elicited by cross-examination of the witnesses, which tend to prove beyond doubt that the Weasel is the natural enemy of field mice, and that no greater mistake could be made than to destroy Weasels where mice or voles are numerous, and are likely to become a plague.

(To be continued.)

## NOTES AND QUERIES.

### MAMMALIA.

**Marten in Co. Westmeath.**—Referring to your article on the "Marten in Ireland," in 'The Zoologist' for March last, you may be glad to know that I have found an entry in an old Game-book which has been kept at this house since the year 1814, to the effect that a Pine Marten was killed at Knock-Drin in the winter of 1845–46. The exact date is not specified; but it was on some day between October 23rd, 1845, and January 3rd, 1846.—H. C. LEVINGE (Knock-Drin Castle, Mullingar).

**Dimensions of Otter.**—I have read with much interest your articles on the Otter, *Lutra vulgaris*, which have appeared in 'The Zoologist,' and I have noted particularly your remarks on the size and gestation of the same. I have in my possession a dog Otter, which measures from tip of nose to tip of tail 56½ inches. It was killed on the River Derwent, below Cockermouth, about forty years ago, by a man named Thursby, from whose daughter I purchased it. Anyone who would like to see it can do so by calling at my address.—JOHN R. DENWOOD (Kirkgate, Cockermouth).

**Serotine Bat in Essex.**—Nearly eleven years ago I had the pleasure of recording, for the first time in this county, the occurrence of the Serotine Bat (Zool. 1883, p. 173, and Proc. Essex Field Club, vol. iv., p. iv). Since that time the species has not again been met with in Essex, and the record still stands as the most northerly occurrence of the species in Britain. I am glad therefore to be able to add that, about 1 a.m. on Aug. 25th last, a fine male specimen entered my bed-room here by the window, which stood open to the extent of about two inches at the top. I made every effort to secure it, seeing that it was some uncommon species, but it was more than half-an-hour before I succeeded, and then only by a novel expedient. It proved an unusually large specimen. Its total length (tip of nose to end of tail) is 5¼ in., weight ⅝ oz., and expanse of wing 14 in., thus equalling the ordinary dimensions of the Noctule in this respect. In colour it certainly did not answer to the description usually given of the Serotine. Nowhere was there any appearance of the "deep chestnut-brown" which both Bell (Mammals, p. 46) and Harting (Zool. 1891, p. 102) say usually distinguishes the species. The back was of a dark blackish brown, but the fur was tipped with yellowish grey, thus giving much the same "freckled" appearance as the silvery-grey tips of the Barbastelle. The under parts were of a smoky-grey.—MILLER CHRISTY (Pryors, Broomfield, Chelmsford).

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* See 'The Zoologist,' 1893, pp. 121—138.

## CETACEA.

**White-beaked Dolphin in Kilbrannan Sound, Arran.**—On Sept. 1st a female White-beaked Dolphin (*Lagenorhynchus albirostris*, Gray) was captured in a singular manner off Dougarie, Arran, by John Galbraith, a fisherman, of Carradale. It measured 9 ft. 8 in. in length, and contained a fœtus about 4 ft. long. It was fortunately secured for the Kelvingrove Museum, Glasgow, by Dr. Dunlop, who, on Sept. 11th, furnished the following account of its capture to the 'Glasgow Herald.' This is so interesting that I think many readers of 'The Zoologist,' who do not see the 'Glasgow Herald,' may be glad to peruse the extract. On Sept. 25th the same man caught in his drift-net, near the same spot, a male of the same species, measuring 6 ft. 6 in. in length. This also was sent to the Kelvingrove Museum. From this and personal observations I am inclined to think that the species is not quite so rare as has been supposed, but is mistaken for a Porpoise, as specimens above mentioned were so called by their captor. — JOHN M. CAMPBELL (Curator, Kelvingrove Museum, Glasgow).

The account given by Dr. James Dunlop is as follows :—"On Saturday, Sept. 1st, at four o'clock in the morning, he drew his trawl-net at a point rather more than a quarter of a mile from the Arran shore, opposite Dougarie, a district in the island near to which the Duke of Hamilton has a shooting-lodge. Just before the bag of the trawl-net was got on board, it felt heavy to draw, and by-and-by the large tail of what was then thought to be an unusually big Porpoise was brought into view. With considerable rapidity and no little skill, a rope was hitched round its tail, and the form of the hitch was such that the stronger the pull upon the rope, the tighter the hitch became. Besides, the shape, size, and position of the tail favoured the non-slipping of the hitch. Getting the bag of the net rapidly on board, the Dolphin got away with great force and speed, running out about twenty fathoms of cable of twenty-one threads thickness, not, however, before the other end was securely made fast to what fishermen term 'the timmer-head' of the smack. Mr. Galbraith, finding that the Dolphin was fast, at once took the helm, and soon he found that his smack was being rapidly towed through the water. As he had fully four miles of the Sound to cross before he could reach Carradale Pier—the wind, a slight breeze from the north-west, almost a dead head wind for him—he determined to try how far he could guide the Dolphin in the direction of home. Away went the Dolphin at a great speed, coming every now and then to the surface to breathe. At first it made a powerful effort to get rid of the rope which was securely fastened to its tail, so securely that the rope left a deep mark on the skin and flesh. It was observed by Mr. Galbraith that when it came up to the surface in its early efforts to breathe, a jet of water was blown up to a considerable height, but in the later efforts, when the towing of the smack had somewhat exhausted its strength, more of the head was above the surface and for a longer period, and that when it blew no water was thrown out from the blow-hole. This observation is corroborative of what has been stated by some naturalists, that Porpoises and Dolphins do not take in water by the mouth and eject it from the blow-hole in expiration—that the water thrown up in jets is merely the surface water which is over the blow-hole when it comes up to breathe. In the tow across the Sound, from the Arran shore to the Carradale side, the course of the smack was obliquely upwards, and some difficulty was at first experienced to get the Dolphin to go in a right direction. Sometimes it put on a spurt, turning its head down channel as if determined to make tracks outwards for Ailsa Craig. At other times it headed straight up channel, north and by east, as if it wished to get round Whitefarlan Point and to enter Lochranza. These tactics on the part of the Dolphin did not suit Mr. Galbraith's purpose, and with considerable skill he compelled it to tow him almost straight for Carradale Pier. He says that whenever the Dolphin headed down channel and put a strain upon the tow-rope, he put the tiller, not the helm, hard to starboard. The bow of his smack went rapidly to port, and going considerably to port the tow-rope, acting like a long lever upon the tail, turned the Dolphin's head up channel; and then, when it was going too much to the north, the tiller was put hard to port, which movement sent the smack's head more to starboard and the north than the Dolphin itself: this had the effect of putting the tail to starboard, and sending the head in the opposite direction. In driving a horse, the coachman, through the reins and bit, gets the horse to take the side to which the pressure of the bit in the mouth has been applied. Mr. Galbraith made his fishing skiff pull the tail the one way in order to get the head to take the other. In rather less than an hour the skiff was towed against the wind a distance of four miles, much to the amazement of the men of the fishing fleet who were in the neighbourhood, who could not understand how, with neither sails nor oars, Galbraith's skiff was going fast yet dead in the eye of the wind. When the Dolphin and skiff reached within three or four hundred yards of Carradale the strength of the animal, which was observed to be flagging, suddenly gave way. It had been coming frequently to the surface to breathe, and seemed to have difficulty in getting down below the surface again. Mr. Galbraith, taking in the slack of the tow-rope sufficiently, got a purchase on it with block and tackle, and hoisted the tail upwards out of the water. This action deprived the Dolphin of its pcwer. Its head went down below the surface of the water, and, after a short but violent struggle, it was drowned. For the remainder of the distance it was towed into the pier by the smack. About sixteen or seventeen hours after death it was in Glasgow, and examined by Mr. Eglinton, of the Kelvingrove Museum, who found that, owing to the exhaustion following great muscular effort and other conditions, the skin had begun to slide, due to rapid putrifying changes, and that it was unfit for preservation by stuffing, a matter of great regret to Mr. Campbell and others. The skeleton, however, is preserved. The calf is preserved whole in spirit, and is well worthy of examination."

## BIRDS.

**Autumnal Migration of the Meadow Pipit.**—On October 16th, whilst walking along the shore at Emsworth, I noticed flocks of Titlarks, *Anthus pratensis*, in such numbers as I have never seen before, evidently on the point of migrating. I first observed them on the shore immediately in front of Thorney Island, which they covered in a brown mass. The different flocks, which were seen in several directions, must have numbered many thousands. Knox, in his 'Ornithological Rambles in Sussex,' gives an account of similar flocks near Brighton, early in September, and Mr. Borrer, in his lately published 'Birds of Sussex,' says that by the end of September most of them have departed for the winter. I think you may like to place my date on record, as it is apparently an unusually late one.—F. H. Arnold (The Hermitage, Emsworth).

**Barrow's Goldeneye (Clangula islandica).**—Writing of ducks, it may be of interest to record an attempt to rear the Iceland Goldeneye. Not being able to go to Iceland myself, I asked my friend, the Rev. H. H. Slater, to assist me. Mr. Halfdanarson kindly sent a man to Myvatn, where he procured twenty eggs of Barrow's Goldeneye, which were carried home and placed under three hens. Unfortunately one of the hens broke all the eggs in her charge. The other two hens only hatched out one duckling apiece, and these unfortunately soon died. Mr. Slater thinks that the shaking which the eggs received on horseback must have addled the majority of them. Perhaps some one else may be more fortunate in experimenting in this direction, for Barrow's Goldeneye would be an interesting addition to the various species of wildfowl kept on ornamental waters in this country.—H. A. MACPHERSON (Carlisle).

**Hybrid Mallard and Sheldrake.**—I am sorry to report that the male Sheldrake, which paired with a female Wild Duck, was not the male parent of the young hybrids to which I referred (p. 396). Although the Sheldrake was observed to pair with the duck, he seems to have been unsuccessful. The eggs, it appears, were fertilised by an interloper, a Muscovy drake, entirely unknown to us. The young birds are fine healthy specimens of the cross between the Muscovy Duck and the Wild Duck. — H. A. MACPHERSON (Carlisle).

**Baillon's Crake at Brighton.** — On Sept. 2nd a good specimen of Baillon's Crake was caught by birdcatchers on the downs near the Ditchling Road, Brighton. It was brought to Messrs. Pratt & Son, where I saw it alive on the following day. On dissection it proved to be a nearly mature female. The base of the bill in life was greenish blue, and the breast is pale grey, beautifully and regularly barred and mottled with darker grey, but the chin is uniformly pale grey or almost white. The top of the head is a most beautiful fawn-colour, and the eyes very bright, the irides being fawn-coloured. In Saunders's 'Manual of British Birds' the adult male is said to have the base of the bill and the irides red. The white line on the outer web of the first primary is very distinct, but narrow.—A. F. GRIFFITH (15, Buckingham Place, Brighton).

**Black-backed Purple Gallinule in Hampshire.**—In 'The Zoologist' for 1866 (p. 229), the late Mr. H. Reeks, of Thruxton, recorded the capture of a Purple Gallinule at Redbridge, near Southampton. Happening to be in the neighbourhood, I thought it worth while to search this *Porphyrio* out, which, with Mr. Edward Hart's help, I did, and found it in the cottage of the man who shot it thirty years ago; but instead of being *Porphyrio cæruleus*, as we expected, it turned out to be a specimen of the Australian Black-backed *P. melanotus*. The plumage showed no signs of confinement, but the bird was probably an escaped one nevertheless.—J. H. GURNEY (Keswick Hall, Norwich).

**Nesting of the Lesser Redpoll in Bedfordshire.**—As the Lesser Redpoll seems to have nested this year in greater numbers than usual in Somersetshire, it may add further interest to the facts to note the following for Bedfordshire. Previous to this year I have only been able to obtain information respecting one nest with eggs found in this county, and that many years ago at Shefford. But this year I was able to obtain two nests from the neighbourhood of Langford; the first contained one egg, on May 2nd, towards a clutch of five; the second nest was taken on May 12th, with five eggs. Since then a correspondent informed me that he secured a clutch of six eggs of this species, on June 10th, near Bedford, and on the same day another nest with five eggs was found by a lad. Since then a third nest was taken with three eggs, all in the same locality. From these occurrences it appears that the Lesser Redpoll has this year nested in the midland and southern counties in greater numbers than usual.—J. STEELE ELLIOTT (Dixon's Green, Dudley).

**American Golden Plover in Ireland.**—On Sept. 13th I obtained a specimen of the American Golden Plover, *Charadrius virginicus*, amongst a lot of Golden Plovers, which had been sent direct from Belmullet, Co. Mayo. The bird is an adult, retaining a good portion of the black breast of the summer plumage, and differs from the European species in being longer in the tarsus. and having the axillary feathers smoke-grey instead of white, and a broad band of white over the eye. This species has not hitherto been detected in Ireland.—E. WILLIAMS (2, Dame Street, Dublin).

[The closely allied Asiatic Golden Plover, which is doubtfully distinct, has been recorded to have been met with on two occasions in Norfolk, *viz.*, in December, 1874, and again in the autumn of 1882, as well as in Perthshire in August, 1883, and in Orkney in November, 1887; but we do not remember any recognition of the American form in the British Islands, notwithstanding its exceptional occurrence in Heligoland, as noted by Herr Gätke. Some years ago we had an opportunity of examining and comparing a good series of the three recognised forms of Golden Plover, *C. pluvialis*, *C. fulvus* (vel *longipes*), and *C. virginicus* (or, as it is now called, *dominicus*), and of noting their differences and measurements (Pro Zool. Soc. 1871, p. 116). The colour of the axillary plume in the Plovers has generally been relied upon as a good distinguishing character, being white in *pluvialis*, grey in *fulvus* and *virginicus*, and black in *Squatarola helvetica*; but Mr. Cordeaux has observed that in *pluvialis* it is not always uniformly white, but is occasionally more or less edged and broken with smoke-grey (Zool. 1869, p. 1544), upon which we suggested (*tom. cit.*, p. 1601) either that the Lincolnshire specimen, upon which his remarks were founded, might have been one or other of the exotic forms, or that the colour of the axillary plume, being variable, could not be relied upon as a specific character.—ED.]

**Large Clutches of Eggs.**—Seeing in 'The Zoologist' (p. 345) a note by Mr. Salter in regard to an unusual number of eggs having been found in the nests of the Marsh Tit (*Parus palustris*) and Willow Wren (*Phylloscopus trochilus*), I send you a list of some clutches (which I have in my cabinet, and also some I have seen), which contain more than the average number of eggs. I hope other oologists will relate their experience on this subject. The following amongst others I have in my collection:—A clutch of thirteen Coot (*Fulica atra*), from Aberdeenshire; seven Sand Martin

(*Cotile riparia*), from Perthshire; seven Bearded Tit (*Panurus biarmicus*), from Norfolk; six Hen Harrier (*Circus cyaneus*), from the Orkney Isles (six eggs seems to be the full complement for any hawk); a clutch of seven Starling (*Sturnus vulgaris*), a nest of seven and another of eight Redstart (*Ruticilla phœnicurus*), all from a district near Bath; four Common Tern (*Sterna fluviatilis*), from Dorset. I have also seen the following:—Twelve Marsh Tit, three Great Plover, four Arctic Tern, fourteen Blue Tit, twelve Great Tit; and six eggs in the following nests:—Rook, Starling, Jackdaw, Red-backed Shrike, Goldfinch, Dipper, Bearded Tit, Yellow Bunting, Swallow, Sand Martin, and a few of the commoner birds. Six, I think, may be considered to be above the usual number generally laid. I have never found more than five eggs in nests of the Blackbird or Thrush. —C. B. HORSBRUGH (4, Richmond Hill, Bath).

**Supposed Occurrence of the Black Stork in Devonshire.**—On April 3rd, about 2.30 p.m., two large birds were observed standing on a rock about twenty yards from the shore off Salcombe Cove, near Sidmouth. They looked like Herons in size, or a little larger, and on examining them with a binocular, the plumage was black or very dark, the beak red and long, and the legs red and long. My informant, an Eton Master, is no ornithologist; but on showing him the coloured plate of *Ciconia nigra* in Dresser's 'Birds of Europe,' he without the slightest hesitation recognised it as the species he saw at Salcombe.—EDWARD HAMILTON (16, Cromwell Place, S.W.)

**Birds Nesting near Epsom.** — The Stonechat nested this year on the common at Epsom, and several cases of the Hawfinch nesting in Newton Wood and in the neighbourhood were reported, one nest having fully-fledged young on June 3rd. This nest was near Mickleham, and contained three young birds. The Cirl Bunting was observed on May 13th near Mickleham, no doubt breeding, and the Wood Wren was watched in the same place. About four years ago a Bittern was shot, in a fog, on Epsom Common, and as I can find no evidence of its having been recorded before, I mention it now. It is set up, and in the possession of the person who killed it.—J. A. BUCKNILL (Epsom).

**Great Snipe in Kent.**—A Great Snipe (*Gallinago major*) was shot on Oct. 1st by Capt. Plumbe, Royal Marines, who kindly sent it to me. It was killed in the neighbourhood of Deal. — W. O. HAMMOND (St. Albans Court, near Wingham).

**Grey Plover on the Yorkshire Moors in August.**—Just after the Grouse-shooting had commenced at Thornton Moor, Wensleydale, a pair of Grey Plovers were most unexpectedly met with, and one of them was shot. This bird, a male, still retained the black breast indicative of the breeding season. The appearance of this species at such an unusual time of year seems worthy of note. As a rule the Grey Plover passes through this country early in May on its way north to breed, returning early in October. —J. PERCIVAL (Carperby, Aysgarth, R.S.O.).

**Woodcocks nesting in Co. Wicklow.**—The following extract is taken from my diary, dated "Ballyarthur, Co. Wicklow," August 3rd, 1866:— "When walking on a path in the wood with two of my brothers, in the afternoon, five Woodcocks got up close to us, two old and three young birds; they only flew a short distance, when they again alighted. The young birds were able to fly pretty well, owing to their apparent unwillingness to leave the locality. I think they must have been hatched close by." Old birds have occasionally been seen at Ballyarthur during the summer months.— H. L. BAYLY (Portland House, Ryde, Isle of Wight).

**Albino Swallow.**—At Winchelsea, last month, I saw what I had never before seen, though it may not be uncommon, possibly—an albino Swallow. It was pure white, without a spot of colour; the body snowy white, the wings a little less pure in tint. I watched it a long time flying around, and was much struck with its apparent size; it looked much larger than its dark-coloured companions. This note may interest you if—as I suspect it is not—a very common occurrence in the Swallow tribe. — JOHN LOWE (4, Gloucester Place, W.).

[White or nearly white varieties of the Swallow are not very uncommon. They are generally obtained in autumn, and are almost invariably young birds. See 'Zoologist,' 1880, p. 24; 1882, p. 372; 1885, p. 461; 1889, p. 418; 1892, p. 4?3; and 1894, p. 59. Many years ago (Sept. 1871), when in a gunning punt in Pagham Harbour, we shot a white Swallow as it crossed the bows in company with a flock of migrating Sand Martins, and, having skinned it, presented it to the Natural History Collection in the British Museum, where it is preserved. In October, 1892, a correspondent of 'The Times' gave an account of a white Swallow which had been captured near Westgate-on-Sea, and became tame enough to feed from the hand. The following summer we received a photograph of another, which was taken alive at York, and on two occasions we have noted cases in which the entire brood was white (Zool. 1880, p. 24; 1894, p. 59).—ED.]

## FISHES.

**Scorpæna dactyloptera on the Norfolk Coast.**—In the Supplementary List of Norfolk Fishes, published in the 5th vol. of the 'Transactions' of the Norfolk and Norwich Naturalists' Society, at p. 635, Dr. Lowe, on my authority, includes *Sebastes norwegica* as a species new to the county of Norfolk. It is with great regret that I now find I was in error in determining the species of this fish, and that it is in reality an example of *Scorpæna dactyloptera*, Delaroche. I may mention that this latter fish was quite unknown to me, and of course is not included in any of the books on British Fishes; but being in Edinburgh last August, Mr. Eagle Clarke gave me a copy of a paper which he had contributed to the Royal Physical Society on the occurrence of *Scorpæna dactyloptera* on the Yorkshire coast, and I at once suspected that I had blundered in naming the Norfolk fish, which upon re-examination I found to be the case; but to prevent any possibility of further mistake, I sent the specimen to Mr. Clarke, who was good enough to confirm me in this respect. Of course, the occurrence of this species is of much greater interest than that of *Sebastes*, but nevertheless I regret the error. Fortunately it was only recorded in the 'Transactions' of the Norfolk Naturalists' Society, and if those who possess Dr. Lowe's list will kindly correct the name little harm will be done, provided that gentlemen will forgive my having misled him. — T. SOUTHWELL (Norwich).

**The Bergylt off Whitehaven.**—In August last my friend Dr. I'Anson, of Whitehaven, asked me to come and identify a fish, which he thought might probably prove to be a specimen of the Bergylt (*Sebastes norwegicus*). I accordingly went over to Whitehaven to see it, and was glad to be able to confirm its identification. It was caught off the Whitehaven coast at the beginning of August last, and is the first specimen that I have seen in the N.W. of England.—H. A. MACPHERSON (Carlisle).

[The Bergylt, or "Norwegian Haddock," as it is inappropriately called by the Aberdeen fishermen, for it has very little resemblance to the Cod-like fishes, is common enough on the Norwegian coast, and ranges northward to Greenland, but is not often recognised on the east of Scotland and England, and is still rarer on our western, or rather north-western, shores. The figure given by Couch in his 'Fishes of the British Islands' (vol. ii. pl. lviii.) gives a good idea of its form, though the colour is too brown. When fresh out of the water it is red, darkest on the back, paler on the sides, and the belly white.—ED.]

## SCIENTIFIC SOCIETIES.

### ENTOMOLOGICAL SOCIETY OF LONDON.

*October 3rd*, 1894.—The Right Honble. Lord WALSINGHAM, M.A., LL.D., F.R.S., Vice-President, in the chair.

Mr. Alick Marshall, of Bexley, Kent, was elected a Fellow of the Society.

Mr. W. F. H. Blandford exhibited specimens of a sand-flea, chigoe or nigua, received from Mr. Szigetváry, of the Imperial Maritime Customs, China, who had found them in the ears of sewer-rats trapped at Ningpo. Mr. Blandford stated that the species was allied to, but not perhaps identical with, the American species, *Sarcopsylla penetrans*, L., one of the most troublesome pests in Tropical America and the West Indies to man and various domestic and wild animals, the female burrowing into the skin, usually of the feet, but also of any other accessible region. He said that the distribution of the chigoe was recorded over Tropical America and the Antilles from 30° N. to 30° S., and of late years it had established itself in Angola, Loango, and the Congo.

Mr. F. C. Adams exhibited a specimen of *Mallota eristaloides*, a species of Diptera new to Britain, taken by himself in the New Forest, on July 20th last. He said that the species had been identified by Mr. Austen, of the British Museum, and that he had presented the specimen to the National Collection. Mr. Verrall made some remarks on the species and on the distribution of several allied species in the United Kingdom. Lord Walsingham, as a Trustee of the British Museum, expressed his satisfaction at the presentation of the specimen to that Institution.

Mr. Tutt exhibited specimens of a form of *Zygæna exulans*, well scaled, and with the nervules and fore legs of a decidedly orange colour, collected during the last week in July by Dr. Chapman in the La Grave district of the Alps, at a considerable elevation; also specimens of the same species, taken by Dr. Chapman near Cogne, and others from the Grison Valley, which were less densely scaled. He also exhibited Scotch specimens, for comparison, and stated that he was of opinion that the latter were probably as thickly scaled as the continental ones; but that, owing to the differences in the climate of Scotland and Switzerland, collectors had fewer opportunities of getting the Scotch specimens in good condition.

Mr. P. M. Bright exhibited a remarkable series of varieties of *Arctia menthastri* from N. Scotland, also series of *Liparis monacha* (including dark varieties) and *Boarmia roboraria* from the New Forest; *Zygæna exulans* from Braemar; *Noctua glareosa* from Montrose and the Shetlands; *Agrotis pyrophila* from the Isle of Portland, and Pitcaple, N.B.; red varieties of *Tæniocampa gracilis;* and a specimen of *Sterrha sacraria*, taken at light, at Mudeford, in October, 1893; also living larvæ of *Eulepia cribrum*.

Mr. J. J. Walker exhibited a living specimen of a large species of *Pulex*, which he believed to be *Histricopsylla talpæ*, Curtis, taken at Hartlip, Kent. Mr. Verrall and the Chairman made some remarks on this and allied species.

Mr. K. J. Morton communicated a paper entitled "Palæarctic Nemouræ."

Lord Walsingham read a paper entitled "A Catalogue of the Pterophoridæ, Tortricidæ, and Tineidæ of the Madeira Islands, with Notes and Descriptions of New Species." In this paper sixty-six species of Lepidoptera belonging to these families were recorded as occurring in the Madeiras, of which thirty were noticed as peculiar to the Islands, twelve as common to the Madeiras and Canaries (of which two were known as occurring elsewhere), and one extends its range only to North Africa. Over thirty species were added to the list, and one new genus, seven new species, and two new varieties were described. Mr. Jacoby and Mr. Bethune-Baker made some remarks on the species and their geographical distribution.

Mr. Blandford read a paper entitled "A Supplementary Note on the Scolytidæ of Japan, with a list of Species."

*October* 17*th*, 1894.—H. J. Elwes, Esq., F.L.S., F.Z.S., President, in the chair.

Dr. H. G. Breyer, of Prætoria, Transvaal, South Africa, was elected a Fellow of the Society.

Mr. G. C. Champion read a letter, dated 15th August last, from Mr. J. Y. Johnson, of Funchal, Madeira, on the subject of a recent visitation of locusts to the island, and exhibited specimens. Mr. Johnson mentioned that Darwin, in his 'Origin of Species,' recorded that in November, 1844, dense swarms of locusts visited Madeira. He said that since then, until August last, these insects had not visited the island. Mr. Champion remarked that the species sent by Mr. Johnson was *Decticus albifrons*, Fabr., not a true migratory locust. Mr. Champion also exhibited specimens of *Anthaxia nitidula*, *Velleius dilatatus*, and *Athous rhombeus*, taken by himself in the New Forest during the past summer.

Mr. H. Goss read a letter he had received from Capt. Montgomery, J.P., of Mid-Ilovo, Natal, reporting vast flights of locusts there, extending over three miles in length, on August 31st last, and exhibited a specimen of the locust, a species of *Acridium*. Capt. Montgomery stated that, as a rule, his district, and most of Natal, was free from the pest, but that an exceptional invasion had occurred in 1850.

Mr. J. W. Tutt exhibited four typical specimens of *Emydia cribrum* from the New Forest, and, for comparison, four specimens of the variety *candida* of the same species, taken at an elevation of 4000 feet, near Courmayeur, on the Italian side of Mont Blanc. He stated that he had also met with this form in the Cogne Valley, at an elevation of from 6000 to 8000 feet.

Mr. R. Adkin exhibited, for Mr. H. Murray, a specimen of *Erebia æthiops*, in which the last fore wing was much bleached, taken in August last, near Carnforth. Mr. Adkin also exhibited a series of *Acronycta rumicis* from Co. Cork, including light and black forms, with examples from the Scilly Isles, Isle of Man, and North of Scotland, for comparison.

Mr. Elwes exhibited a series of *Chionobas alberta* (male and female), *C. uhleri* var. *varuna*, and *Erebia discoidalis*, from Calgary, Alberta, N.W. Canada, collected in May last by Mr. Wolley-Dod. He said that the validity of *C. alberta*, which had been questioned by Mr. W. H. Edwards, was fully established by these specimens.

Prof. Poulton gave an account of the changes he had recently made at

Oxford in the arrangement of the Hope Collections in the Department of Zoology, and as to the rooms now available for students working at these collections.

Mr. G. T. Bethune-Baker communicated a paper entitled "Descriptions of the *Pyralidæ*, *Crambidæ*, and *Phycidæ* collected by the late T. Vernon Wollaston in Madeira."—H. Goss, *Hon. Secretary*.

## NOTICES OF NEW BOOKS.

*Notes on the Birds of Rainham: including the District between Chatham and Sittingbourne.* By Walter Prentis. Post 8vo, pp. 92. London: Gurney & Jackson. 1894.

The author of this little book is not unknown to our readers, who will recognise his name as that of an occasional contributor to this Journal. We are glad to see that he has now published some more extended observations on the birds of the district in which he resides.

Rainham lies in the north-eastern parliamentary division of Kent, and within sight of the Isle of Sheppey, Queenborough, Sheerness and the Nore. Looking to the north-east, one may see the mouth of the Medway, the Isle of Grain, and, on a clear day, Southend in Essex. To the west and south, there is no view beyond the woods. The soil of Rainham is a good loam resting upon the chalk, more or less deep where the latter does not approach the surface, more or less thin near the woods, where the soil is flinty. Cultivation, Mr. Prentis tells us, is "going on as well as it can be done; almost everything that is either sown or planted grows as a rule to an average perfection."

From this it will be seen that the district is tolerably diversified, and with woods on one side of the parish, and marshes on the other, it is not surprising that there is also a diversity of bird-life. Many migratory species find at least a temporary resting-place in the neighbourhood, although naturally in these days of cheap guns and ten-shilling gun licenses, the larger kinds soon get shot or driven away. We regret to find Mr. Prentis enrolling himself amongst the local army of gunners, and admitting (p. 10) that he and his friends were instrumental in shooting at and driving away an Osprey, which for the time being "escaped, taking a direct course up the river." How much better would it have been for the author to have used his influence to secure its protection, and to have pointed out to the game preservers in his neighbourhood that, so far as they were concerned, the Osprey, from its piscivorous habits, would not be likely to do any harm, while it would afford pleasure and instruction to those who, watching its fishing operations, take a keener interest in observing the actions of uncommon birds than in pursuing and slaying them. If our rarer birds are to be preserved from eventual extermination, it might well be through the efforts of local ornithologists. A very good example in this direction has been already set in Norfolk, and on the Farne Islands, and we trust it may be followed in other parts of the country.

We should like Mr. Prentis's little book better if he had told us more about the habits of the birds observed by him, their coming and going, the period of their stay, and particularly the food of the smaller species, which as an agriculturist he has evidently good opportunities for ascertaining. Instead of information of this kind, his remarks are too often limited to a mere record of a particular species having been seen or shot at a particular date. Occasionally, however, we come across something more interesting, as for example, under the head of "Montagu's Harrier" we are told that this bird "always comes to us *in the spring* of the year, unlike the Hen Harrier, which always comes *in the autumn;* that they take up their quarters in the woods, flying over the fields and low coppices till they are shot."

The Shrike which Mr. Prentis saw on the top of a faggot-stack, and which he describes as "a brown bird not unlike a Thrush" (p. 17), was surely not the Grey Shrike as he supposes, but a female Redbacked Shrike.

"The Bearded Tit," he says, "has not to my knowledge occurred in my district; but three were shot in a reed bed on the banks of the Medway in the winter of 1865 near Maidstone." Is this the latest instance of its occurrence in Kent? Mr. Miller Christy has chronicled its history in the adjoining county of Essex ('Birds of Essex,' 1890, p. 91); and it appears from the 'Reports on the Migration of Birds' (ix. p. 20) that one appeared at Landguard Lighthouse in the early morning of Feb. 16th, 1887, and left at noon. This, however, is a long way further north, off the Suffolk coast.

Another noteworthy bird, in this case obtained by the author himself, is the Redthroated Pipit, *Anthus cervinus*, which was shot at Rainham in April, 1880. This is not the first record of the specimen however, and the author would have done well to have mentioned this, as also the fact that it was identified at the British Museum by Mr. R. B. Sharpe (*cf.* 'Zoologist,' 1884, p. 272).

The migratory habits of the Rook are thus noticed by Mr. Prentis (p. 43):—"Throughout the summer I see but few; when I begin to sow the wheat in the autumn they come by thousands, and continue doing so, off and on, throughout the winter, leaving soon after the barley is sown in the spring."

The migratory habits of the Greater Spotted Woodpecker also are alluded to (p. 45). "When they do occur, which is very rarely, they invariably come in the month of October; several have been obtained at that time of year, old birds, both male and female." The Lesser Spotted Woodpecker has been met with and obtained on several occasions in the lower orchard adjoining the marsh, a favourite locality both in autumn and winter.

An unusual site for a Cirl Bunting's nest is described (p. 35): "In an old dried-up decoy pond, built on the ground amongst the dead stems of the reeds"; the writer adds, "they are sometimes caught by the bird-catchers in winter."

Mr. Prentis thinks that Magpies are kept down by foxes, because he "once found one which had been buried by a fox, leaving the tip end of its tail in view." Probably this was a wounded bird, or a tame one which had made its escape; it would take a clever Fox to catch a wild and uninjured Magpie.

The utility of Sand Martins in an unexpected direction is worth notice. The author once saw "about 300 of these birds all in a line upon a field of young turnips, sitting and fluttering along, devouring the fly and the turnip beetle." This, if we mistake not, is an original observation.

The Red-legged Partridge is said to have "spread within these few years all over the district," but Mr. Prentis need not have added the remark that "their habit of running before the dogs causes them to be of little use to the sportsman"; for it is well known that in districts where "partridge driving" is resorted to, the red-legged bird is considered invaluable.

A few typographical errors should be corrected, as for instance, *Saxicolo* (p. 24), Cole (p. 29), pipet (p. 33), *melanocephala* (p. 35), which is not the right name for the Reed Bunting, dikes (p. 48), scull (p. 59), gargany (p. 71), and *Podiceps* (pp. 76, 77), which, following Linnæus, should be *Podicipes*. This was pointed out by Professor Newton in a footnote to Babington's 'Birds of Suffolk,' 1886 (p. 200), and has since been generally and very properly adopted by ornithologists. The paragraph relating to the "African Whydah Finch" (p. 39) should be deleted, this bird having no possible claim to recognition as a visitor to this country, otherwise than through man's agency.

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*The Birds of Pembrokeshire and its Islands.* By the Rev. MURRAY A. MATHEW, M.A., F.L.S. 8vo. Pp. i—lii; 1—131. With Illustrations and Maps. London: R. H. Porter. 1894.

THE avifauna of the Welsh counties has long stood in need of investigation by some skilled ornithologist, and Mr. Mathew has done good service by publishing the result of his observations made during eight years' residence in Pembrokeshire. Indeed, had not the accident of ill-health compelled him to sojourn there, on account of the healthiness of the climate, it is more than probable that we should still be without any connected account of Pembrokeshire birds.

It is scarcely correct, we think, to state, as our author does in his "Introduction" (p. xiii), that "there are no Welsh ornithologists who lived earlier than the present century." We have some dim recollection of having read in an early volume of the 'Philosophical Transactions' some letters by Edward Lhwyd, written about 1695, containing observations in Natural History made during his travels through Wales and Scotland; but writing at this moment amongst the beautiful woody vales and snow-capped peaks of Carnarvonshire, far away from all note-books, except the one in use, we are unable to state precisely the nature of the observations in question, further than that they had reference to, amongst other things, Blackgame, Storks and Crossbills in Pembrokeshire. The Stork has no place in Mr. Mathew's list, and the Black Grouse has long been extinct, though the precise date of its extermination in the county has not been even approximately ascertained. Within the memory of man an attempt has been made to re-introduce this fine game-bird into a county where the discovery of its bones has proved its former existence, but hitherto the experiment has been unsuccessful. The Black Grouse has also disappeared apparently from several districts in South Wales, where it was once common. Its former abundance, says Mr. Mathew, is supposed to be attested by the number of inns scattered about bearing the sign of the "Blackcock." This, however, may either testify to the presence of the bird, or only to its heraldic representative, as the Blackcock is the old crest of the Mathew family, at one time owning large estates in various parts of South Wales. It forms, therefore, a most appropriate device on the cover of the volume before us, with the Welsh motto, "Y fyn Duw a fydd," which signifies, as we are informed, "What God willeth will be."

We were not prepared for the information that it is doubtful whether the Red Grouse is still a native of Pembrokeshire, for we had supposed that the Precelly ridge of hills, which stands out so prominently to the north of the county, would surely yield at least a limited annual supply of these much-coveted game-birds. Indeed, rumour indicates their presence still, on the Cardiganshire side of the Precelly range.

Amongst the characteristic birds of Pembrokeshire, it is satisfactory to note that on the cliffs along the coast, the Buzzard, Peregrine, Raven and Chough are still to be met with, together with the less noticeable Rock Pipit and Wheatear. In the north of the county we learn that the Hen Harrier still quarters the wilder moors. The Water Ouzel and the Grey Wagtail are common on every mountain stream, and have for their companions the Ring Ouzel and the Common Sandpiper. The Stonechat may be seen on every common and is one of the characteristic small birds. The Cuckoo and the Nightjar rejoice in the wilder parts of the country, where as summer visitors they are said to be exceptionally plentiful; while the Linnet, Yellowhammer, and Chaffinch are very abundant. Amongst the soft-billed summer migrants, the Chiffchaff and the Sedge Warbler seem to be the best represented, the former occasionally remaining through the winter. A walk in spring across any extensive common is sure to be enlivened by the strange "humming" of the Snipe, which breeds in many places throughout the county. Our Author calls the sound "drumming," as do many other writers, but we prefer the term "humming," not only because it seems to indicate more exactly the nature of the sound produced (as we are quite convinced) by the vibration of the flight-feathers, but also because the name "mire-drum" is, or was, by common consent, locally bestowed upon the Bittern, in former days resident wherever there were meres and reed- and rush-grown bogs for it to skulk in, and doubtless a common Pembrokeshire bird. In the summer many of the cliffs along the coast, and most of the islands, are thronged with sea-fowl, amongst which the Gannet and Manx Shearwater are remarkable as having breeding-stations in but few other places in the kingdom.

But in reviewing the Pembrokeshire avifauna, it seems to us that the chief interest centres in those species which are conspicuous by their absence; bearing in mind the western position of the county, and the fact that many of these absentees are unknown also in Ireland. According to Mr. Mathew, the following species which are common in most of the English counties, as also in Central and Eastern Wales, are either never seen, or are extremely rare in Pembrokeshire, and of those marked with an asterisk not a single example has been known to occur:—Redstart, *Nightingale, Lesser Whitethroat, Garden Warbler, *Dartford Warbler, Wood Wren, *Reed Warbler, Nuthatch, Ray's Wagtail, Great Grey Shrike, Red-backed Shrike, Pied Flycatcher, Hawfinch, *Tree Sparrow, *Mealy Redpoll, *Twite, Cirl Bunting, Wood Lark, Great Spotted Woodpecker, Lesser Spotted Woodpecker, Wryneck, *Osprey, *Grey Lag Goose, Black Grouse, Spotted Crake, Stone Curlew, and Dotterel.

Of these the Reed Warbler, the Garden Warbler, and the Lesser Whitethroat, appear to be very rare throughout Wales, as they are also in the south-west of England.

It is curious that the Yellow Wagtail is only seen in Pembrokeshire as it passes in spring and autumn, there being no instance on record of its having remained to nest. The number of species ascertained to breed in the county is 113, but since the commencement of the century three others have ceased to do so, namely, the Kite, the Marsh Harrier, and the Black Guillemot.

Not the least interesting portion of Mr. Mathew's book is that section of his "Introduction" (pp. xxxv—xl) in which he deals with the subject of migration, and the Reports from the Pembrokeshire lighthouses, all of them well situated; the "Smalls" in particular, which from its position fifteen miles out at sea, in the centre of St. Bride's Bay, where it is almost exactly opposite to the lighthouse on the Tuskar Rock, that stands seven miles off the Wexford coast, might afford valuable statistics respecting the passage of birds between Pembrokeshire and Ireland. The lighthouse on the South Bishops Rock off St. David's peninsula, the two lighthouses at the entrance to Milford Haven, and the tall lighthouse on Caldy, are all important stations from which the returns are of great interest. Such lighthouses as those in Cardigan Bay, on the Smalls, and on Lundy, are of special value from their isolated position so many miles from land, where they must necessarily attract birds that make their aerial journeys well out at sea. In fine weather the birds fly wide of, or high above, the lighthouses; but in stormy or misty weather, they flutter about them during the night and the early hours of the morning in a bewildered manner, and hundreds perish from dashing themselves violently against the lanterns.

Mr. Mathew states, however, that he is quite unable to arrive at any beyond the most general conclusions, as the materials for forming any adequate theory are as yet far too scanty from the returns supplied. They serve nevertheless to reveal the fact that several species commonly regarded as residents are to be included amongst the birds which periodically migrate.

The position of the Pembrokeshire lighthouses, as well as those at a distance, which doubtless influence the direction of the migrating flocks, is clearly shown on a folding map at the end of the volume, while another map of the county indicates most, if not all, of the localities which are referred to in the text. The accompanying illustrations, from photographs of some of the more notable haunts of sea-fowl in Pembrokeshire, furnish a most appropriate embellishment to a well-planned and very well-written volume.

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